The Bulletins are published weekly throughout the school year (thirty issues) to aid teachers and students in keeping abreast of geography behind current news events.

GEOGRAPHIC SCHOOL BULLETINS

of

The National Geographic Society

WASHINGTON 6, D. C.

The National Geographic Society is a non-profit educational and scientific society established for the increase of geographic knowledge and its popular diffusion.

VOLUME XXXII

May 10, 1954

NUMBER 29

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Eastman and Edison in 1928—Moving pictures stemmed from the teamwork of the two great geniuses. Edison developed his "continuous picture" camera, but its usefulness depended on Eastman's introduction of transparent flexible film in 1889. The centenary of Eastman's birth is observed this summer (Bulletin No. 4).

FROM GEORGE EASTMAN HOUSE, ROCHESTER

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within the tropics. Lowlands along the coast and in the deep-cut river valleys of the west and south are hot and humid.

Since September, 1952, the kingdom has included Eritrea, long Italian-dominated. This gives Ethiopia much-needed seaports.

Ethiopia's people are as varied as its terrain. About one third, including the ruling class, are Amharas. Christians since the fourth century, they are descended from Hamites and Semites. Both peoples are Caucasians, akin to the majority of Europeans, the ancient Egyptians, and the Berbers of north Africa. Amharic is Ethiopia's official language.

More than half of Haile Selassie's subjects are Gallas, a pastoral people of Hamitic origin who overran the country in the 16th century. Fused with the Amharas, they include Christians, Moslems, and pagans.

East of the plateau in the Awash valley nomad Danakils roam from place to place seeking pasturage for their camels, cattle, and sheep. South, in the Ogaden region, live the fierce Somalis. Also herdsmen, they travel with camels'-hair tents stretched on wicker frames. Virtually independent, they pay small yearly tribute to Haile Selassie.

Wild West—Near the western border the generally pagan Shankallas hold sway. To the north the Falashas—Jews who cling to their ancient religion—read scripture in Geez, the language of Ethiopia's church. Most of them are laborers, chiefly skilled in iron work.

Although almost any kind of fruit and vegetable can be grown in the fertile, well-watered uplands, agriculture has been little developed. Coffee thrives on large plantations in the Harar area in the east, and accounts for more than half the value of Ethiopia's export list. Next in importance come hides, including many leopard skins from Ogaden.

For many years Ethiopia had no permanent capital. Kings traveled about with enormous retinues and set up camps like vast tent cities. In the 1890's Menelik made Addis Ababa his seat of government. Set on the slopes of the Entotto mountains at 8,000 feet, the city of an estimated 400,000 people sprawls over more hills than Rome.

The Experts Aid—Haile Selassie, conscientious and progressive ruler, has been quick to perceive the advantage of foreign aid to his country. He has called on Swedish army officers to train his imperial guard, British officials to organize the police, and engineers from the United States to restore and extend the war-wrecked highway system.

Experts from the United States set up the new agricultural school in Jimma and a technical college in Addis Ababa. They teach on the faculty of the University at Addis Ababa, organized and presided over by Canadians. Many Italian technicians have been allowed to remain in the country Mussolini did so much to destroy. For many years Europeans called the country Abyssinia, from an Arabic word meaning "mixture."

References—Ethiopia is shown on the National Geographic Society's map of Africa. Write the Society's headquarters, Washington 6, D. C., for a map price list.

See also "Open-Air Law Courts of Ethiopia," in *The National Geographic Magazine*, November, 1935; "Traveling in the Highlands of Ethiopia," September, 1935; "Life's Tenor in Ethiopia," June, 1935; and "Modern Ethiopia," June, 1931. *(Issues of The Magazine 12 months old or less are available to schools and libraries at a specially discounted price of 50¢ a copy. Earlier issues are 65¢ a copy through 1946; $1.00, 1930-1945; $2.00, 1912-1929. Write for prices of issues prior to 1912.)*

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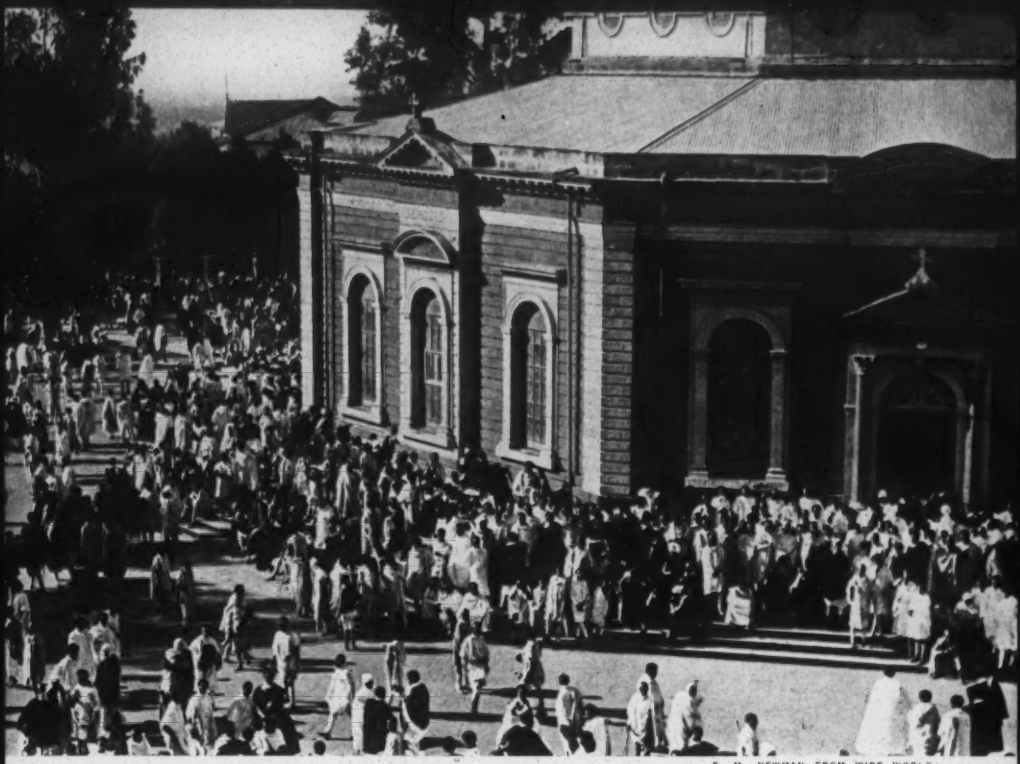

E. M. NEWMAN FROM WIDE WORLD

Like Christians Everywhere, Ethiopians Flock to Church on Sunday—The Coptic form of Christianity came to the deep-African country centuries ago. The octagonal building is St. George's Cathedral in Addis Ababa, the capital. Other churches take a round shape and some are carved from rocky cliffs. Many townspeople still wear the traditional *shamma* (a togalike garment) and circular cloak.

Bulletin No. 1, May 10, 1954

Ethiopia's Ruler to Visit America

When Emperor Haile Selassie of Ethiopia comes to Washington this month, he will visit for the first time the Western nation which has greatly influenced the modernization of his ancient land.

With 2,000 years of recorded history under rulers said to date back to the Queen of Sheba, Ethiopia is one of the world's most enduring monarchies. Until the air age, this nation of 400,000 square miles and 9,000,000 to 15,000,000 people was almost unknown to the rest of the world. Its geographic position tended to isolate it.

Plateau Heart—Spreading fan-shaped at the angle of eastern Africa where the Red Sea meets the Gulf of Aden, Ethiopia is shut in by deserts and forests and unnavigable rivers. Its center is a high plateau ridged with mountains and slashed by deep forested ravines. The Blue Nile, the Abbai to Ethiopians, has its source in Lake Tana in the northwest.

The plateau's elevation—4,000 to 8,000 feet above the sea—gives the upland region a temperate climate although the entire country is

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dairy products, and aircraft manufacture. Wichita, served by eleven airports, is called "the air capital of the world."

When President Pierce signed the 1854 bill, Nebraska included parts of the Dakotas, Montana, Wyoming, and Colorado. Lewis and Clark, first Americans to explore the region, found seven Indian Tribes there. The State derives its name from the Otoe Indian word *Ne-brath-ka,* meaning "shallow water" and referring to the Platte River.

Nebraska Leads in Farms—Nebraska at the last census had 1,358,000 people in its 77,227 square miles. The largest of its 93 counties, Cherry, is as big as Connecticut and Rhode Island combined.

A quilt pattern of farms blanketing the Cornhusker State ranks it sixth in total crop production. It has a larger percentage of land in farms than any other State. Symbolizing Nebraska's fertile farmlands, a 32-foot bronze statue, "The Sower," adorns the central tower of the State capitol at Lincoln. It is copied on the commemorative stamp.

Nebraska industry depends largely upon its agricultural raw materials. More than 500 factories process food. Meat packing, the major industry, is centered in Omaha, world's second-largest livestock market.

Commemorating the centennial, the Library of Congress in Washington, D. C., this spring exhibits 231 rare documents and photographs showing the early turbulent history and later development of the two states. History of the American cowboy is on display from original book manuscripts to posters of early motion pictures of the Wild West.

References—Kansas and Nebraska are shown on the Society's map of the North Central United States.

See also "The West Through Boston Eyes," in *The National Geographic Magazine,* June, 1949; "Mapping the Nation's Breadbasket," June, 1948; "Taming the Outlaw Missouri River," November, 1945; "Nebraska, the Cornhusker State," May, 1945; and "Speaking of Kansas," August, 1937.

Cows in the Classroom—Students with pad and pencil judge and are judged for college credit in learning the dairy business at the State College of Agriculture, Manhattan, Kansas. Cattle rank high among farm products of both Kansas and Nebraska.

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Leavenworth in Frontier Days—Re-created for the motion picture, "The Plainsman," the Missouri River water front of the town bustles with activity. Pioneers prepare for the long trek west across the plains via the Santa Fe and Oregon trails.

Bulletin No. 2, May 10, 1954

Kansas, Nebraska Mark Territory Centennial

Commemorative three-cent stamps issued May 7 at Nebraska City and May 31 at Fort Leavenworth help residents of Nebraska and Kansas celebrate their centennial as organized territories. May 30 is the exact day for them to remember pioneers who carved two rich agricultural states from a region early mapped as "Great American Desert." It was on that day in 1854 that President Pierce signed the Kansas-Nebraska Act.

Today Kansans and Nebraskans can look back on a history crowded with all the adventure of the Old West. Buffalo Bill Cody and Kit Carson scouted Indians on the rolling plains. Over trails rutted by covered-wagon caravans, hardy Pony Express riders and stagecoach drivers whipped their steeds. Rugged cow towns like Abilene and Dodge City sprang up as cattle drives pushed northward.

Torn by Strife—With the signing of the Kansas-Nebraska Act, "Bleeding Kansas" became the scene of violent struggles between Free State and proslavery forces.

The act provided that residents of the two new territories could choose to bar slavery or allow it. For the next seven years, opposing factions fought over the question. John Brown rushed to Kansas in 1855 to help force the issue the abolitionists' way. Finally, in 1861, the Free State forces won and Kansas was admitted to the Union.

Today the Sunflower State counts some 2,005,000 citizens. Its 82,276 square miles lie at the geographic center of the United States. Named for an Indian tribe, the Kansa, the State produces one fifth of the Nation's wheat and ranks third in beef-cattle production.

Oil derricks dot the landscape of much of Kansas. Near Hugoton is the world's largest natural-gas field. Rich deposits of salt, lead, and zinc also lie below the fertile topsoil. The State has more than 3,000 manufacturing plants. It ranks high in flour milling, meat packing, processing of

stretched from what is now northern Ecuador across Peru into Bolivia and Chile, including a bit of present Brazil and Argentina.

Legends and relics trace the origin of the Inca movement to the 12th century, when a tribe of Quechua-speaking, sun-worshiping herdsmen settled in the 11,000-foot Cusco valley.

Some students say the cradle of the civilization they founded was probably the mysterious city of Machu Picchu (illustration, back cover), whose ruins were discovered by Dr. Hiram Bingham in 1911, and excavated by the National Geographic Society and Yale University.

Whatever their beginnings, the Incas, like the Romans, won and held an empire by conquest and organization. Their supreme ruler was called the Inca, from the Quechua word for prince. The power the dynasty came to wield, as its territories expanded and tribute poured in, was one that later dictators might have envied.

From the massive stone center of Cusco, sacred city of the sun, the Inca's influence reached every subject's home. Unity was maintained by a closely knit administrative setup. Loyalty was assured by bringing bright youngsters from remote provinces to train in Cusco. Rebellious citizens were resettled in docile districts. Faithful lieutenants were stationed in uncertain regions to keep others in line.

Builders and Planners—Skillful engineers, the Incas built roads and bridges and raised elaborate stone houses and temples whose mortarless remains baffle present-day architects.

The Inca chiefs organized a vast agricultural kingdom, with fertilized fields, rotated crops, and a grain-storing system. They constructed irrigation works, including walls, steps, and aqueducts still in use. Their metallurgy, pottery, and weaving showed striking artistic design and execution.

As with other empires, dissolution of the Inca domain came when the central government was weakened by family and civil strife. Spain's Francisco Pizarro and his gold-seeking followers, having captured and killed the ruling Inca in 1533, met but faint resistance from the demoralized rank and file.

Today the descendants of the Incas usually have little desire to do more than tend their herds of llamas and sheep, and grow subsistence crops in the Andean valleys—corn, wheat, barley, potatoes, and quinoa. Life is hard and simple.

Only rarely, and in the remote places, is there a flare-up such as happened in Sangarara.

References—Peru may be located on the Society's map of South America.

For additional information, see "Peru, Homeland of the Warlike Inca," in *The National Geographic Magazine*, October, 1950; "Finding the Tomb of a Warrior-God," April, 1947; "Camels of the Clouds," May, 1946; and "The Incas: Empire Builders of the Andes," February, 1938.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, October 23, 1950, "Inca Walls Endure in 'Quake-Stricken Cusco."

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EWING GALLOWAY

How Firm a Foundation—Spaniards built Cusco's Monastery of Santo Domingo on the ruins of pagan Incas' holy Temple of the Sun. When struck by earthquake in 1950, the Spanish superstructure cracked, but the walls of Inca-cut stone stood firm.

Bulletin No. 3, May 10, 1954

Inca Descendants in Peru Resist Change

The Wild West of the United States has swapped its guns and tomahawks for dude ranches and open-air movies, but the west is still wild in parts of South America.

Recent reports from Sangarara in the highlands of southern Peru tell of an Indian attack with stones and clubs on a party of mining prospectors. The outbreak, readily quelled, was attributed to the aborigines' fear that mining development would bring encroaching settlement and loss of their lands and homes.

The Indians of the high, barren country in the Andes scratch out a meager but independent existence. Descendants of the Incas, they look back to a civilization old when the Spaniards came in the 16th century.

Cusco Was Inca Rome—Cusco, only 40 miles northwest of the little town of Sangarara, was the capital of the famous Indian empire that

The Eastman story is a rags-to-riches saga that outdoes fiction. When the upstate New York boy was six he moved with his family to Rochester, a city to achieve world-wide renown as the home of the Eastman Kodak Company. His father died, leaving the family so poor that George had to leave school at 14 to go to work for $3 a week. At 20 he was a clerk in the Rochester Savings Bank earning $15 a week.

During a vacation at the age of 24, George tried his hand at amateur photography. He purchased and became deeply engrossed in the cumbersome wet-plate outfit of the day, little improved over the Civil War equipment of Matthew Brady. He decided to try and find a simpler method.

Still working at the bank, Eastman devoted nights to his new-found hobby. Using a formula he had read about in a British journal, he took over his mother's kitchen as a laboratory and began making dry-plate emulsions. By 1881 he had leased a third-floor loft and was in business—supplying dry plates through jobbers to the few photographic dealers.

Doggedly, Eastman overcame production difficulties in his search for simplicity. His first Kodak of 1888 was loaded with a roll of sensitized paper long enough for 100 exposures. Camera and all went to Rochester to have each exposed strip removed, developed, printed, and a new strip inserted—all for $10.

Transparent Film Base—Climaxing this forward step came the first Eastman transparent film in rolls in 1889. Produced of nitrocellulose in strips 200 feet long, it was clear and grainless, making unnecessary the delicate business of stripping the negative from its base.

Working independently, Thomas Edison developed his motion-picture camera to the point where he required flexible transparent film long enough to keep his pictures moving several seconds. Eastman's product filled the bill, and the public soon had its movie nickelodeons.

In 1891, Eastman made daylight-loading cameras possible by supplying transparent film rolled on spools. From then on, rolls of film could be bought and developed almost anywhere. Simplified cameras soon followed—a pocket-size box camera in 1895, then the folding pocket Kodak, and in 1900 the revolutionary Brownie camera, selling for $1.

Each 20th-century year brought new photographic advances, among them amateur movies and color film. *The National Geographic Magazine* under Gilbert Grosvenor kept pace. Its *Cumulative Index* lists the Society's pioneering achievements in photography.

Industrialist, Philanthropist—As profits accrued, Eastman returned them to the people. He established "dividends on wages," and set up employee retirement annuity, life insurance, and disability benefit plans. In 1919 he gave stock worth $10,000,000 to his employees.

In order to provide children a better chance in life, Eastman gave dental clinics to Rochester, London, and several European cities. The $30,000,000 that he signed away to the University of Rochester, Massachusetts Institute of Technology, Hampton and Tuskegee Institutes on a single day in 1924 was only a part of his support of education.

Since 1947, George Eastman House at Rochester has been open to the public as a nonprofit photography center and living memorial to the man who popularized photography. It is the house he built in 1905.

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NATIONAL GEOGRAPHIC PHOTOGRAPHER DAVID S. BOYER

Photographing Niagara Falls Was No Honeymoon Before Eastman's Time—The old wet-plate process made the photographer a pack horse, chemist, acrobat, technician, and production manager all in one. The tent is a portable dark room in which the plate is prepared before exposure and developed immediately after. Here a modern re-enactment shows the photographer signaling a boy assistant to bring him a freshly prepared plate with which he will make a three- or four-second shot of the Falls.

Bulletin No. 4, May 10, 1954

Wizard of Photography Born a Century Ago

The man who gave photography to the average family and made household words of "Kodak" and "Brownie" was born 100 years ago this July.

George Eastman (1854-1932; illustration, cover) matched inventive genius with production know-how to give brother Willie and aunt Mabel their first dollar cameras in 1900. He added greatly to the golden era of the Ingersoll watch and the Model T Ford and established the foundation for the truly fabulous world of photography today.

Press the Button—With "You press the button, we do the rest," Eastman introduced his first Kodak in 1888. Unlike previous cameras, it was a small, light, and self-contained box. It opened a new age in amateur and professional photography. The National Geographic Society, founded by coincidence the same year, soon began publishing staff-made and contributed photographs from over the world and became a trail blazer in bringing successive Eastman advances to a large public.

Scotland Yard's total force of approximately 16,000 men, including about 1,400 C.I.D. detectives, closely matches the New York Police Department. Its backbone is the dignified, courteous P.C., or bobby, but detective-story writers usually choose C.I.D. operatives (the Sergeant Fridays of London) as their heroes in adding to Scotland Yard's fame.

The bobby's uniform remains much the same as it was in Sir Robert Peel's time. The main change is his distinctive rounded helmet. It took the place of an earlier and even taller beaver top hat.

Scotland Yard's cable address is simply "Handcuffs, London." But like guns, handcuffs are seldom carried by the men from the Yard.

Years ago, one inspector summarized Scotland Yard's idea with a framed slogan which he hung over his desk. It read "Softly, Softly, Catchee Monkee."

References—London is shown on the Society's map of The British Isles.

See also, "In the London of the New Queen," in *The National Geographic Magazine*, September, 1953; "A Stroll to London," August, 1950; "The British Way," April, 1949; and "Keeping House in London," December, 1947.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, March 29, 1954, "London Bridge Is Standing Up"; "Tower of London May Hold Buried Treasure," March 16, 1953; and "A New Lord Mayor of London Takes Office," November 3, 1952.

A Policeman's Lot Is Sometimes "an 'appy One"—While onlookers chuckle, an amused London bobby in St. James's Park halts traffic for Mrs. Mallard and ducklings.

WIDE WORLD

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Bulletin No. 5, May 10, 1954

Gunless Police Serve London's Scotland Yard

It is a firm belief at Scotland Yard, London's police headquarters, that a policeman should not carry a gun.

Neither uniformed P.C.'s (police constables) nor inspectors of the C.I.D.—the Yard's Criminal Investigation Department—normally are armed with more than short truncheons. Guns, they feel, would only provoke criminals into carrying them too. Since 1829 Scotland Yard men have just walked in and captured the crooks.

Their law-enforcement record probably has made a block-long group of gray-stone buildings along the Thames Embankment near Westminster Abbey the world's most famous police station.

"Thief-takers"—Actually, the address is New Scotland Yard, although the "New" is usually forgotten. Old Scotland Yard was a building in Whitehall where in Saxon times the kings of Scotland stayed when they came to pay homage to the English court. It housed the London police prior to 1890.

In 1749 novelist Henry Fielding, appointed London's first paid police magistrate, organized a small group of helpers. They became known as the "thief-takers." Not until 1829, however, was Scotland Yard's force created under Sir Robert Peel. This year marks the Yard's 125th anniversary.

Peel's men were first dubbed "peelers," and then more familiarly, "bobbies." The nickname "copper" or "cop" is believed by some to derive from copper buttons worn by Peel's force. To others the Latin *capere*—to take—seems a more likely source. Today a "copper's nark" in England means a stool pigeon, or police informer.

Scotland Yard is nothing more nor less than the headquarters of the Metropolitan Police of London. Technically its jurisdiction covers only the 734 square miles of greater London, minus one square mile in the middle protected by the City of London Police, the Lord Mayor's men.

If serious crime occurs elsewhere in England, however, the local constable can call for help from Scotland Yard. A "Flying Squad" is always ready. If such assistance is requested within 24 hours of the time the crime was reported to the local police, it is given without charge; otherwise the local government has to foot the bill.

Dial 999—By simply dialing 999, Londoners can be connected directly to Scotland Yard's Information Room. Within three minutes, on the average, a "Sweeney"—radio patrol car—will be at the scene.

The Map Room keeps track not only of the location of every police car, some disguised as delivery trucks, taxis, or private cars, but also where all major crimes took place over the preceding six months.

Along Scotland Yard's passages, offices with coal-burning fireplaces and the famous "Black Museum" hold memories of Britain's worst criminals. Jack the Ripper, wife-slaying Dr. Crippen, and the "Charing Cross Trunk Murderer" are only a few. Around the museum's walls hang death masks of men executed for their crimes.

JOHN SAYLE, JR.

Machu Picchu, Holy City of the Incas, Rides an Andean Mountain Saddle at 8,000 Feet

Two American boys survey its crumbling temples and terraces from 9,060-foot Huayna Picchu. Colonial Spaniards never found this hide-out in the sky where the Inca kingdom survived for 39 years after Cusco's fall. Hiram Bingham Highway, dedicated in 1948, leads in from the left to the white guest house. The old mule-trail approach zigzags below it (Bulletin No. 3).

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